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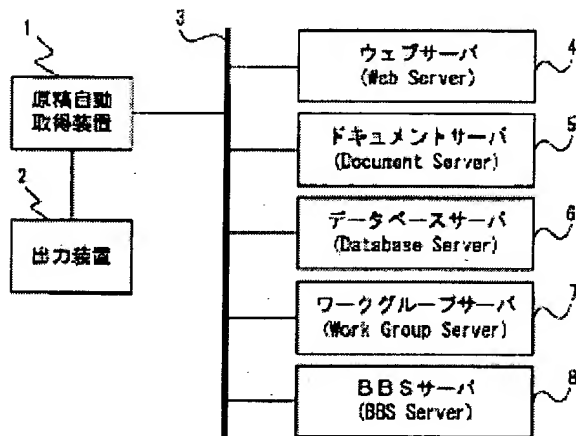   Takahisa Kimura, Patent Attorney

F terms (reference): 5B021 AA01 CC07
                     5B089 GA13 GB03 KA01 KC28 KC29 KC52 KC58

(54) **[Title of the Invention] Method and Device for Automatic Acquisition of a Document**

(57) **[Abstract]**

[Object] To provide a method and device for the automatic acquisition of a document with which the user can automatically acquire and print out the desired document.

[Means] When certain conditions have been satisfied, automatic document acquiring device (1) accesses pre-determined servers (4, 5, 6, 7, and 8) and acquires a document and the acquired document is printed out from output device (2).

原稿自動取得装置	ウェブサーバ (Web Server) 4
	ドキュメントサーバ (Document Server) 5
	データベースサーバ (Database Server) 6
出力装置	ワークグループサーバ (Work Group Server) 7
	BBSサーバ (BBS Server) 8

1. Automatic document acquiring device

2. Output device

[Claims]

[Claim 1]   A method for automatic acquisition of a document whereby a document kept at a server is acquired through a network, which is characterized in that it comprises

storing data relating to the document to be acquired from this server;

automatically acquiring the document from this server based on these stored data; and

printing out this acquired document.

[Claim 2]   The method for automatic acquisition of a document according to claim 1, further characterized in that the automatic acquisition of this document is executed on condition that the actual time and a pre-determined time coincide or a pre-determined amount of time has passed.

[Claim 3]   The method for automatic acquisition of a document according to claim 1, further characterized in that the automatic acquisition of this document is executed on condition of receipt of an electronic mail at a pre-designated account.

[Claim 4]   The method for automatic acquisition of a document according to claim 1, further characterized in that the automatic acquisition of this document is executed on condition of generation of a command for document acquisition by user operation.

[Claim 5]   The method for automatic acquisition of a document according to claim 1, further characterized in that these data include an identifier specifying the server where the document is kept.

[Claim 6]   The method for automatic acquisition of a document according to claim 1, further characterized in that these data comprise restrictions relating to the document to be acquired.

[Claim 7]   The method for automatic acquisition of a document according to claim 1, further characterized in that at the time of automatic document acquisition, validation data are sent and said server performs validation based on these validation data.

[Claim 8]   A device for automatic acquisition of a document with which a document kept on a server is acquired through a network, which is characterized in that it comprises

a document data memory means that stores data relating to the document to be acquired;

a document acquiring means that automatically acquires a document based on data stored in this document data memory means; and

a document output means that prints out the document acquired by this document acquiring means.

[Claim 9]   The device for automatic acquisition of a document according to claim 8, further characterized in that it comprises a trigger means that actuates this document acquiring means whereby this trigger means starts this document acquiring means on condition that the actual time and a pre-determined time coincide or a pre-determined amount of time has passed.

[Claim 10]   The device for automatic acquisition of a document according to claim 8, further characterized in that it comprises a trigger means that starts this document

acquiring means whereby this trigger means starts this document acquiring means on condition of receipt of an electronic mail at a pre-designated account.

[Claim 11]   The device for automatic acquisition of a document according to claim 8, further characterized in that it comprises a trigger means that actuates this document acquiring means whereby this trigger means actuates this document acquiring means on condition of generation of a document acquisition command by user operation.

[Claim 12]   The device for automatic acquisition of a document according to claim 8, further characterized in that an identifier specifying the server where the document is kept is stored in the document data memory means.

[Claim 13]   The device for automatic acquisition of a document according to claim 8, further characterized in that restrictions relating to the document to be acquired are stored in the document data memory means.

[Claim 14]   The device for automatic acquisition of a document according to claim 8, further characterized in that validation data specific to a user are stored in the document data memory means and this user is validated for the acquisition of a document based on these validation data.

[Detailed Description of the Invention]

[0001]

[Technological Field of the Invention]

The present invention relates to a method and device for the automatic acquisition of a document and in particular, to a method and a device for the automatic acquisition of a

document with which it is possible to automatically acquire a document that is capable of being acquired through a network.

[0002]

[Prior art] There has been an increase in recent years in the use of electronic documents for data transmission as a result of the increased popularity of the Internet and intranets. These electronic documents are often made available for display with a browser and it is necessary to operate a browser in order to acquire the necessary data.

[0003] Under these conditions, the data that are presented are a mixture of data that are sorted and selected and printed out while the person acquiring data operates the browser and [additional] data that are always printed out. When data are printed out, data that are sorted and selected of course, and even the [additional] data that are always printed out, are displayed using the browser and when the print command is executed, the document is sent to the printer and printed out.

[0004] The flow of the operation from acquisition of the document to printing out of the document will be described while referring to Figure 9. Figure 9 is a flow chart showing the flow of the operation from the acquisition of the document to the printing out of the document.

[0005] When the user begins the operation (step 801), first the browser is started (step 802), a URL (Uniform Resource Locator) is input, and the desired data are acquired and displayed (step 803). The print command on the browser is executed (print button is selected) and the output command is sent to the printer (step 804). When it is necessary to acquire a different document (YES in step 805), the flow returns to step 803 and the same procedure is repeated. Once the output of all of the desired

documents has been completed (NO in step 805), the document acquisition and print out operation is complete (step 806).

[0006] In addition, a browser periodically acquires a document by push technology, but even in this case, it is necessary to operate the browser and send the job to the printer when a document is to be printed out.

[0007]

[Problems to be Solved by the Invention] As previously explained, even if the document that is to be acquired through a network and printed out is a document that is always printed out, it is necessary to acquire and print the document by operating a browser as in the case of documents that are sorted and selected. This type of operation must be performed each time the document is refreshed and is a troublesome operation to the user.

[0008] Therefore, an object of the present invention is to provide a method and device for the automatic acquisition of a document with which the user can automatically acquire and print out the desired document.

[0009]

[Means for Solving Problems] In order to accomplish the above-mentioned object, the invention of claim 1 is a method for the automatic acquisition of a document whereby a document kept at a server is acquired through a network, which is characterized in that it comprises storing data relating to the document to be acquired from this server; automatically acquiring the document from this server based on these stored data; and printing out this acquired document.

[0010] Moreover, the invention of claim 2 is the method for automatic acquisition of a document according to claim 1, further characterized in that the automatic acquisition of this document is executed on condition that the actual time and a pre-determined time coincide or a pre-determined amount of time has passed.

[0011] The invention of claim 3 is the method for automatic acquisition of a document according to claim 1, further characterized in that the automatic acquisition of this document is executed on condition of receipt of an electronic mail at a pre-designated account.

[0012] The invention of claim 4 is the method for automatic acquisition of a document according to claim 1, further characterized in that the automatic acquisition of this document is executed on condition of generation of a command for document acquisition by user operation.

[0013] The invention of claim 5 is the method for automatic acquisition of a document according to claim 1, further characterized in that these data include an identifier specifying the server where the document is kept.

[0014] The invention of claim 6 is the method for automatic acquisition of a document according to claim 1, further characterized in that these data comprise restrictions relating to the document to be acquired.

[0015] The invention of claim 7 is the method for automatic acquisition of a document according to claim 1, further characterized in that at the time of automatic document acquisition, validation data are sent and said server performs validation based on these validation data.

[0016] The invention of claim 8 is a device for automatic acquisition of a document with which a document kept on a server is acquired through a network, which is characterized in that it comprises a document data memory means that stores data relating to the document to be acquired; a document acquiring means that automatically acquires a document based on data stored in this document data memory means; and a document output means that prints out the document acquired by this document acquiring means.

[0017] The invention of claim 9 is the device for automatic acquisition of a document according to claim 8, further characterized in that it comprises a trigger means that starts this document acquiring means whereby this trigger means starts this document acquiring means on condition that the actual time and a pre-determined time coincide or a pre-determined amount of time has passed.

[0018] The invention of claim 10 is the device for automatic acquisition of a document according to claim 8, further characterized in that it comprises a trigger means that starts this document acquiring means whereby this trigger means starts this document acquiring means on condition of receipt of an electronic mail at a pre-designated account.

[0019] The invention of claim 11 is the device for automatic acquisition of a document according to claim 8, further characterized in that it comprises a trigger means that starts this document acquiring means whereby this trigger means starts this document acquiring means on condition of generation of a document acquisition command by user operation.

[0020] The invention of claim 12 is the device for automatic acquisition of a document according to claim 8, further characterized in that an identifier specifying the server where the document is kept is stored in the document data memory means.

[0021] The invention of claim 13 is the device for automatic acquisition of a document according to claim 8, further characterized in that restrictions relating to the document to be acquired are stored in the document data memory means.

[0022] The invention of claim 14 is the device for automatic acquisition of a document according to claim 8, further characterized in that validation data specific to a user are stored in the document data memory means and this user is validated for the acquisition of a document based on these validation data.

[0023]

[Embodiments of the Invention] An example of the method and device for the automatic acquisition of a document of the present invention will now be described while referring to the attached drawings.

[0024] Figure 1 is a block diagram of the structure of the device for automatic acquisition of a document of the present invention. As shown in this figure, an output device 2, which prints out a document, is connected to an automatic document acquiring device 1, and this automatic document acquiring device is connected to a network 3, such as the Internet or an intranet. This automatic document acquiring device 1 automatically acquires documents from a web server 4, a document server 5, a database server 6, a work group server 7, or a BBS server 8 through network 3 and these documents are printed out from output device 2.

[0025] Automatic document acquiring device 1 will now be described. Figure 2 is a block diagram showing the structure of automatic document acquiring device 1.

[0026] As shown in this figure, automatic document acquiring device 1 comprises a document data setting part 11, a document database 12, a trigger 13, and a document acquiring part 14.

[0027] Document data setting part 11 records the settings relating the document acquisition performed by the user (the details of which are given later) in document database 12, and document database 12 stores the settings related to document acquisition that have been recorded from document data setting part 11. Trigger 13 starts document acquisition part 14 in the event of pre-determined conditions, for instance, an obvious command from a user, a certain time on a timer, receipt of an electronic mail, and the like. When document acquiring part 14 is started by trigger 13, data relating to the document to be acquired are obtained from document database 12, the server in question is accessed through network 3, and a document is acquired. The document that document acquiring part 14 has acquired is sent to output device 2, processed for printing by an imaging part 21, and printed out by an output part 22.

[0028] Next, document acquiring part 14 will be described while referring to Figure 3. Figure 3 is a block diagram showing the structure of document acquiring part 14.

[0029] Document acquiring part 14 comprises a trigger start detector 141, which is the main control part, a document data extraction part 142, a database access part 143, a service access part 144, a network access part 145, a document conversion part 146, and a document transmission part 147.

[0030] Trigger start detection part 141 instructs database access part 143 through document data extraction part 142 that document data are to be acquired when the starting of trigger 13 is detected. Based on this instruction, database access part 143 accesses document database 12 and obtains data relating to the document to be acquired. Data relating to the document to be acquired include the day and time when the document was last refreshed, key words contained in the document, and the ID and password needed to acquire the document. Only the necessary data are extracted from the data obtained by database access part 143 by document data extraction part 142 and transmitted to trigger start detector 141.

[0031] Next, trigger start detector 141 transmits the data that were transmitted from document data extraction part 144 to service access part 144 and service access part 144 acquires the document from (the server connected to) network 3 via network access part 145 connected to a network interface 31, which is the interface of network 3.

[0032] The document acquired by service access part 144 is processed by changing the page format using document conversion part 146 and is sent from document transmission part 147 to imaging part 21. The document that has been acquired by service access part 144 at this time is in a format that can be referred to by a browser when it is acquired (HTML and the like), and therefore, it is converted to the appropriate page descriptor for output device 2 by document conversion part 146 and sent to imaging part 21.

[0033] The operation of automatic document acquiring device 1 will now be described while referring to Figures 4 and 5. Figure 4 is a flow chart showing the flow of automatic document acquiring device 1 when various settings are made, and Figure 5 is a flow

chart showing the flow of automatic document acquiring device 1 during document acquisition.

[0034] When various settings are being made, automatic document acquiring device 1 is started (step 201) and settings relating to document acquisition are made (step 202). When trigger conditions are set (step 203), the setting operation is completed and the system enters idle status (step 204). The settings relating to document acquisition are recorded from document data setting part 11 to document database 12. An example is shown below.

1) Identifiers showing the address of the document (URL, and the like)

2) Evaluation of whether or not a document will be output

3) Protocol corresponding to the server side having the document

4) Identifier of the owner

5) Maximum size of document

6) Instruction to save the document

7) Maximum nest [hierarchy] of document

8) Restriction on time needed to acquire document

9) Access point data required for document

The identifier showing the address of the document in 1) is the identifier, such as the URL, for specifying the server that has the document, and the evaluation of whether or not a document will be output in 2) determines whether or not the document can be output based on the time stand of the document, the file name, the file size, and the like. The protocol corresponding to the server side that has the document in 3) can be ordinary HTTP. In contrast to this, it can also contain a sequence or argument requiring

a confirmation of validation of document acquiring part 14. In the latter case, a value that has been dynamically produced is sent from the server side to document acquiring part 14 when the server receives a request for document acquisition from document acquiring part 14; document acquiring part 14 has the sequence that encodes this value using a contract-registered key and sends it back to the server; and the authenticity of the request by document acquiring part 14 can be confirmed by sending and receiving these values as an argument. With respect to the identifier of the owner in 4), it is possible to prove whether or not the server side has the authority to access the document by setting an identifier. The maximum size of the document in 5) is the maximum size of the file that will be acquired or the maximum number of pages that will be printed. The instruction to save a document in 6) means that a document that can be re-printed is selected and the selected document is saved on the local side (memory not illustrated). The maximum nest of the document in 7) means that the maximum hierarchy of the document to be acquired is set when the hierarchy of the document is from a deep link. The restricted time needed to acquire a document in 8) means a setting for stopping the acquisition if a document has not been acquired within the time set for document acquisition so that the fee for document acquisition is stopped when the user is connected to the network through a public circuit. The access point data required for a document 9) means data such as a telephone number for dial-up connection to the network through a public circuit.

[0035] Moreover, trigger conditions are conditions for starting trigger part 13, that is, the conditions for actuating document acquiring part 14 and starting acquisition of the document. For instance, the conditions are set as follows.

[0036] 1) Time

2) Electronic mail reception

3) User instructions

The time in 1) is, for instance, the absolute time, such as 20:00 on October 20; the periodic time, such as at 10:00 a.m. every day; or a time interval, such as every eight hours; and trigger part 13 is started at the time that has been set. The electronic mail reception in 2) means that trigger part 13 will be started when the designated account receives electronic mail. The user instructions in 3) means that trigger part 13 will be started when a user instructs that data are to be acquired from a keyboard or a batch panel (not illustrated) attached to document acquiring device 1.

[0037] Moreover, when a document is acquired by automatic document acquiring device 1, automatic document acquiring device 1 is started (step 301); the above-mentioned settings are saved (step 302); the system is put on stand-by (idle status; NO in step 303) until the trigger conditions are generated; the trigger conditions are generated (YES in step 303); trigger part 13 is started; and as a result, document acquiring part 14 is started (step 304). Next, document acquiring part 14 refers to document database 12 and obtains data relating to the document to be acquired (step 305) and the document is acquired from the server through network 3 (step 306). The document that has been acquired by document acquiring part 14 is output to output device 2 and imaging is performed by imaging part 21 (step 307); the document is printed out from output part 22; automatic document acquiring device 1 returns to step 303; and the system goes on stand-by (NO in step 303) until the next trigger condition is generated.

[0038] Next, document acquiring requests and the document flow between automatic document acquisition device 1 and web server 4, for instance, will be described while referring to Figures 6 through 8.

[0039] Figure 6 is a drawing showing a document acquisition request and the document flow between document acquiring device 1 and web server 4. When document acquiring device 1 acquires a document from web server 4, first automatic document acquiring device 1 transmits an HTTP request (document acquisition request) 401 to web server 4 via network 3. Web server 4 that has received HTTP request 401 adds the document (HTML, and the like) corresponding to this request to an HTTP library 402 and replies. Automatic document acquiring device 1 that has received this reply sends a document 403 to output device 2 and the document is printed out.

[0040] Figure 7 is a drawing showing a document acquisition request and the document flow between document acquiring device 1 and web server 4 when web server 4 validates automatic document acquiring device 1 with an identifier. When web server 4 performs this validation, web server 4 will respond to automatic document acquiring device 1 with an HTTP reply 412 that means access is denied if an automatic document acquiring device 1 that does not have an identifier (or does not have an identifier set) sends an HTTP request 411 to web server 4.

[0041] On the other hand, if an automatic document acquiring device 1 that has an identifier sends an HTTP request 421 to web server 4, web server 4 performs validation based on the data of the identifier that is included in HTTP request 421 and when it is concluded that automatic document acquiring device 1 has access authorization, the document corresponding to this request is added to an HTTP reply 422 and a reply is

sent; automatic document acquiring device 1 that has received this reply sends a document 423 to output device 2; and the document is printed out.

[0042] Figure 8 is a drawing that shows a document acquisition request and the document flow between document acquiring device 1 and web server 4 when acquisition of a document is performed through a firewall. It should be noted here that, as shown in the same drawing, automatic document acquiring device 1 is connected to the Internet 3-2 through an intranet 3-1 and a firewall 9-1, and web server 4 is connected to the Internet 3-2 through an intranet 3-3 and a firewall 9-2. Moreover, document server 5 is connected to the Internet 3-2.

[0043] With this type of structure, an HTTP request 431 cannot go through firewall 9-2 when automatic document acquiring device 1 sends this HTTP request 431 to web server 4 and this request therefore is not received by web server 4. Consequently, automatic document acquiring device 1 cannot acquire the document from web server 4.

[0044] In such a case, first web server 4 transmits and registers a document 441 on document server 5 on the Internet 3-2. Then web server 4 notifies automatic document acquiring device 1 of document registration by an electronic mail 442 (electronic mail will usually go through a firewall). Trigger part 13 is started by receipt of this electronic mail 442 once automatic document acquiring device 1 has received this electronic mail; an HTTP request 443 is sent to document server 5; document server 5 that has received this request adds the document corresponding to this request to an HTTP library 444 and replies; and automatic document acquiring device 1 that has received this document sends the document to output device 2 and the document is printed out.

[0045] Automatic document acquiring device 1 and output device 2 are separate in the above-mentioned description, but automatic document acquiring device 1 can be housed inside the output device, such as a printer or a copy machine.

[0046]

[Effect of the Invention] As described above, by means of the present invention, a pre-determined server is accessed and a document is acquired and the acquired document is printed out when certain conditions are satisfied, and therefore, operations whereby a browser is started every time a document is to be acquired, and the like are unnecessary. Thus, automatic document acquisition is possible. For instance, news items can be automatically acquired and printed out at 8:00 a.m. every day.

[0047] In addition, it is also possible to respond to requests for automatic acquisition of documents that have a fee by validation using a specific identifier. Moreover, the same effect as push technology can be obtained by setting the receipt of an electronic mail as an access condition, and a document can be accessed from a server through a firewall. In addition, documents that are of higher quality than those from a facsimile machine and color documents can be processed.

[Brief Description of the Drawings]

[Figure 1] is a block diagram of the structure of the device for automatic acquisition of a document of the present invention.

[Figure 2] is a block diagram showing the structure of automatic document acquiring device 1.

[Figure 3] is a block diagram showing the structure of document acquiring part 14.

[Figure 4] is a flow chart showing the flow of automatic document acquiring device 1 when various settings are made.

[Figure 5] is a flow chart showing the flow of automatic document acquiring device 1 during document acquisition.

[Figure 6] is a drawing showing a document acquisition request and the document flow between document acquiring device 1 and web browser 4.

[Figure 7] is a drawing showing a document acquisition request and the document flow between document acquiring device 1 and web browser 4 when web browser 4 validates automatic document acquiring device 1 by an identifier.

[Figure 8] is a drawing showing a document acquisition request and the document flow between document acquiring device 1 and web browser 4 when a document is acquired through a firewall.

[Figure 9] is a flow chart showing a conventional operation flow, from the acquisition of a document to the print out of the document.

[Reference numbers]

1.   Automatic document acquiring device

2.   Output device

3.   Network

3-1, 3-3.   Intranet

3-2.   Internet

4.   Web server

5.   Document server

6.   Database server

7.   Work group server

8.   BBS server

9-1, 9-2.   Firewall

11.   Document data setting part

12.   Document database

13.   Trigger part

14.   Document acquiring part

21.   Imaging part

22.   Output part

31.   Network interface

141.   Trigger start detector (main control part)

142.   Document data extraction part

143.   Database access part

144.   Service access part

145.   Network access part

146.   Document conversion part

147.   Document transmission part

401.   HTTP request

402.   HTTP reply

403.   Document

411.   HTTP request

412.   HTTP reply

421. HTTP request

422. HTTP reply

423. Document

431. HTTP request

441. Document

442. Electronic mail

443. HTTP request

444. HTTP reply

445. Document
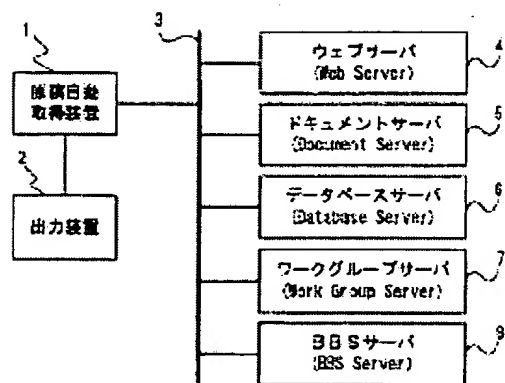
[Figure 1]
1. Automatic document acquiring device
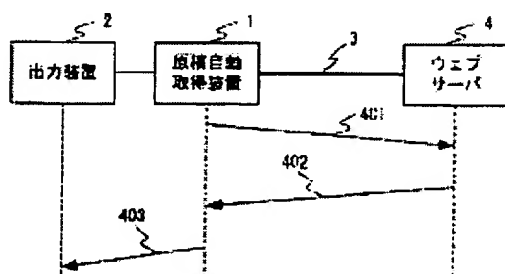2. Output device
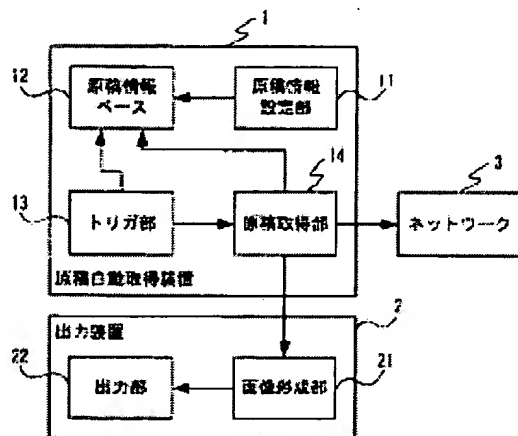
[Figure 2]
3.　　　Network
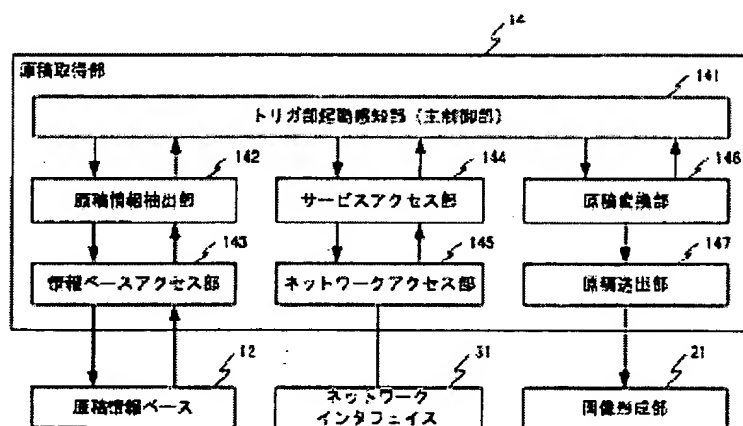
[Figure 3]
12.　　　Document database
14.　　　Document acquiring part

21. Imaging part
31. Network interface
141. Trigger start detector (main control part)
142. Document data extraction part
143. Database access part
144. Service access part
145. Network access part
146. Document conversion part
147. Document transmission part
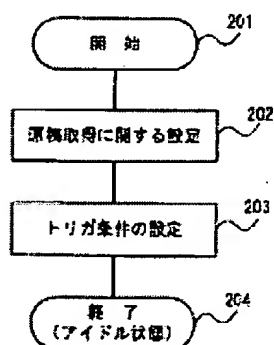
[Figure 4]
201. Start
202. Settings related to document acquisition
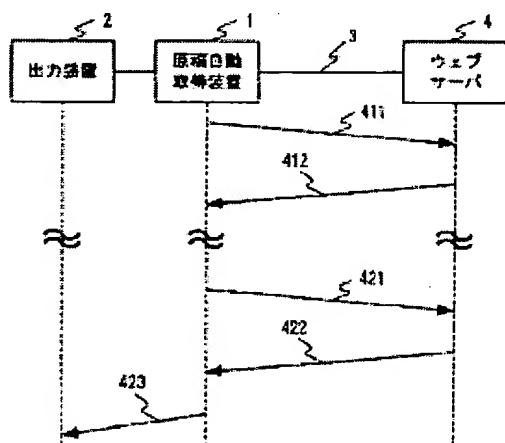203. Setting of trigger conditions
204. End (idle status)
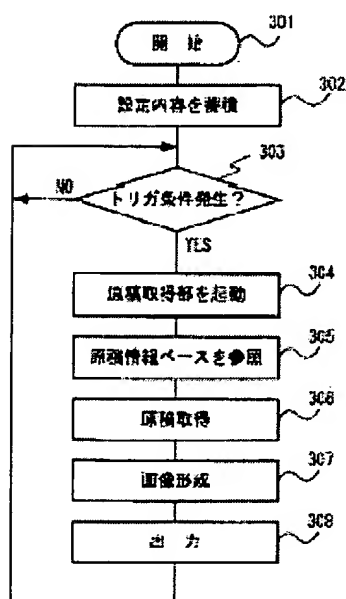
[Figure 5]
301. Start
302. Save settings

303. Have trigger conditions been generated?
304. Start document acquiring part
305. Refer to document database
306. Document acquisition
307. Imaging
308. Output
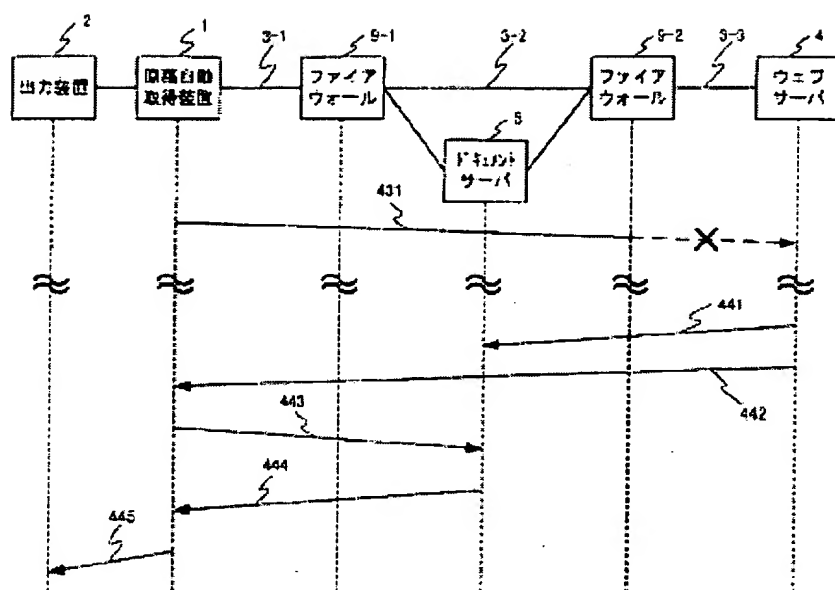

[Figure 6]
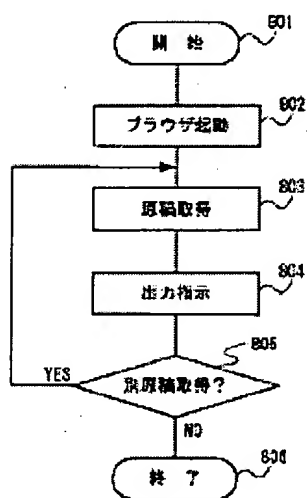1. Automatic document acquiring device
2. Output device
4. Web server

[Figure 7]
1. Automatic document acquiring device
2. Output device
4. Web server

[Figure 8]
1.   Automatic document acquiring device
2.   Output device
4.   Web server
5.   Document server
9-1, 9-2.   Firewall

[Figure 9]
801.   Start
802.   Browser started
803.   Document acquisition
804.   Output instructions
805.   Acquire another document?

806. End